



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

D350-748-201
Job Sheet 174673



Part No: D350-748-201

Job Qty: 1 ea

Part Name: Aft Crosstube AS350 / AS355



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 3/20/18

Job Tracking No:

Due Date: 7/20/18

Created By: Marie Lajeunesse

Type: SOLD

Description:

Note: DWG REV H IPP Rev: A New Issue 06-07-05 JLM IPP Rev: B Update qty of MS21042L5 06-09-12 KJ IPP Rev C Combined manufacturing 08.04.02 EC verified: DD IPP Rev: D 08-06-24 revD as per dwg DD verified: EC IPP Rev: E 08.12.11 Step17 was step 21 KJ Verified: EC IPP Rev: F 10.08.04 added QSI010 4.3 DD ver: EC IPP REV: G ADD UNDER BEND COMMENT 12-05-28 JLM IPP REV: H 12.11.05 as per dwg D350-748-141G DD ver: JLM IPP REV: I 15.03.19 as per dwg D350-748-241revH dd ver: jlm

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	1 Ea	7/19/18	7/19/18	0.00	0.00	Start Up Crosstubes-1		GP 18-07-20
110	CNC Bend Crosstubes	1 pcs	7/19/18	7/19/18	0.00	2.94	CNC Bend Crosstube		GP 18-07-20
120	Crosstubes	1 pcs	7/19/18	7/19/18	0.00	2.65	Crosstubes-2		GP 18-07-20
125	Outsource	1 pcs	7/19/18	7/19/18	0.00	0.00	Outsource1		CT 18-7-20
126	Packaging	1 pcs	7/19/18	7/19/18	0.00	0.00	Packaging2	DAS 18	GP 18-07-20
127	QC	1 pcs	7/19/18	7/19/18	0.00	0.00	QC15	18	GP 18-07-20
128	Crosstubes	1 pcs	7/19/18	7/19/18	0.00	2.65	Crosstubes-2	9-89	GP 18-08-02
130	Crosstubes	1 pcs	7/19/18	7/19/18	0.00	1.85	Crosstubes-2		GP 18-08-02
140	QC	1 pcs	7/19/18	7/19/18	0.00	0.00	QC6		D 18-08-03
150	Outsource	1 pcs	7/19/18	7/19/18	0.00	0.00	Outsource3		GP 18-08-07
160	Packaging	1 pcs	7/19/18	7/19/18	0.00	0.00	Packaging2		AUG 3 1 2018
170	QC	1 pcs	7/19/18	7/19/18	0.00	0.00	QC6		38
174	Outsource	1 pcs	7/19/18	7/19/18	0.00	0.00	Outsource2		9-89
176	Packaging	1 pcs	7/19/18	7/19/18	0.00	0.00	Packaging2		SEP 13 2018
178	QC	1 pcs	7/19/18	7/19/18	0.00	0.00	QC5		38
180	SprayPaint	1 pcs	7/19/18	7/19/18	0.00	0.88	Spray Paint		AL SEP 19 2018
190	QC	1 pcs	7/19/18	7/19/18	0.00	0.00	QC14		OCT 02 2018
200	Crosstubes	1 pcs	7/20/18	7/20/18	0.00	1.85	Crosstubes-2		AL SEP 23 2018
210	QC	1 pcs	7/20/18	7/20/18	0.00	0.00	QC5		68
220	Packaging	1 pcs	7/20/18	7/20/18	0.00	0.00	Packaging1-3		OCT 11 2018
230	QC	1 pcs	7/20/18	7/20/18	0.00	0.00	QC4		OCT 15 2018
235	DC	1 pcs	7/20/18	7/20/18	0.00	0.00	DC		OCT 15 2018
240	Packaging	1 pcs	7/20/18	7/20/18	0.00	0.00	Packaging3-1		OCT 15 2018
250	QC21-FG	1 Ea	7/20/18	7/20/18	0.00	0.00	QC21		OCT 18 2018

Part Op 110 - Bend tube as per Dwg D350-748-241 using CNC bender program D350A and Folio FT

Descriptions: BEND .225" PER SIDE*****

120 - ****VERIFY CROSSTUBE DIMENSIONS AS PER DWG****

125 - ISSUE P/O TO METCOR: P0040501

127 - ***MARK CUT LINES***

128 - CUT TUBE AT HEIGHT ON FAI SHEET

130 - 2- Drill Tube as per Dwg D350-748-241 Using DT8876 Drill Jigs, 3 -Deburr 4- Engrave Part # and Batch # as per

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:15%;">Skid-tube</td><td style="width:5%;">☐</td> <td style="width:15%;">Cross tube</td><td style="width:5%;">☐</td> <td style="width:15%;">Water Jet</td><td style="width:5%;">☐</td> <td style="width:15%;">Engineering</td><td style="width:5%;">☐</td> </tr> <tr> <td>Machining</td><td>☐</td> <td>Small Fab</td><td>☐</td> <td>Prod. Eng. Coord.</td><td>☐</td> <td>Quality</td><td>☐</td> </tr> <tr> <td>Thermoforming</td><td>☐</td> <td>Finishing</td><td>☐</td> <td>Rec/Store/Packaging</td><td>☐</td> <td>Other</td><td>☐</td> </tr> <tr> <td>Large Fab</td><td>☐</td> <td>Composite</td><td>☐</td> <td>Supplier</td><td>☐</td> <td></td><td></td> </tr> </table>						Skid-tube	☐	Cross tube	☐	Water Jet	☐	Engineering	☐	Machining	☐	Small Fab	☐	Prod. Eng. Coord.	☐	Quality	☐	Thermoforming	☐	Finishing	☐	Rec/Store/Packaging	☐	Other	☐	Large Fab	☐	Composite	☐	Supplier	☐		
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Date :		Step #:		QTY Effective :			MRB (QSI042) Approval																																		
Description Work Order Deviation				Disposition																																					
DART Aerospace Ltd. 1270 Aberdeen Street Cambridge, ON N6A 1K7 CANADA TEL: 1 (513) 832-8200 Email: sales@dartaero.com www.dartaerospace.com Container No: S094573 Part: D350-748-201 Job No: 174673 Serial No/Batch: S094573 Revision: Inspector: Exp Date: Instructions: Date: 07/20/18				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval 																																					
Root Cause <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;"> Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ </td> <td style="width:50%;"> No Re-verfic ☐ Operator ☐ Offset/Setu ☐ Supplier ☐ Training ☐ Use for Test ☐ Poor Inform ☐ Rushing ☐ Product Im ☐ Process Im ☐ Manufacturing Process ☐ Past Due ☐ </td> </tr> </table>				Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verfic ☐ Operator ☐ Offset/Setu ☐ Supplier ☐ Training ☐ Use for Test ☐ Poor Inform ☐ Rushing ☐ Product Im ☐ Process Im ☐ Manufacturing Process ☐ Past Due ☐	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;"> Surge ☐ m ☐ < Pulled ☐ ence ☐ off center ☐ </td> <td style="width:50%;"> Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐ </td> </tr> </table>				Surge ☐ m ☐ < Pulled ☐ ence ☐ off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐																														
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OTHER : ☐																																									

Dwg D350-748-241 5-Remove all marks from tube within limits of D350-748-241

150 - Issue P/O 50094

160 - Ensure certificate of conformity is attached

174 - ISSUE P/O TO ACCUREN: 40976 SEP 13 2018

180 - 1-Prime inside and out crosstube as per QSI 005 4.2 Prime 138877 9-89 Prime + 138979

190 - Then, Wrap in plastic bag to protect from scratches

200 - INSTALL GROUND WIRE INSERT, THEN INSERT SCREW AND WASHER 2-Install supports with Proseal 890 per D350-748-241 and QSI 015 EXP: 5096374 exp 3/19 3-Install supports clamps Using Dt8876 as per Dwg D350-748-241, Torque to 60-80 IN-LBS.

235 - Photocopy bluefile & type labels per PPPD350-748-201 CHG003

240 - Identify and pack for shipping as per PPPD350-748-201 PPP Rev: CHG001 see attachment

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D350-748-241TRN	Crosstube Turning Detail	1 (1 ea)	90-Start up Operation	
ALS4-1032-225	Rivnut	1 Ea (1 ea)	200-Crosstubes	
D3502-1	Support	2 Ea (2 ea)	200-Crosstubes	
D5123-7	Clamp Cushion	2 Ea (2 ea)	200-Crosstubes	
MS21920-20	Clamp	2 Ea (2 ea)	200-Crosstubes	
MS27039-1-10	Screw	1 Ea (1 ea)	200-Crosstubes	
NAS1149D0363J	Washer	1 Ea (1 ea)	200-Crosstubes	
AN4-41A	Bolt	8 Ea (8 ea)	220-Packaging	
AN4-6A	Bolt	16 Ea (16 ea)	220-Packaging	
AN5-32A	Bolt	4 Ea (4 ea)	220-Packaging	
D3500-1	Saddle	4 Ea (4 ea)	220-Packaging	
D3501-1	Bushing	16 Ea (16 ea)	220-Packaging	
MS21042L4	Nut	24 Ea (24 ea)	220-Packaging	
MS21042L5	Nut	4 Ea (4 ea)	220-Packaging	
NAS1149D0463J	Washer	32 Ea (32 ea)	220-Packaging	
NAS1149D0563J	Washer	8 Ea (8 ea)	220-Packaging	

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation <u>5076416</u>	D350-748-241TRN	1	0	0
200-Crosstubes	ALS4-1032-225 <u>FH136579-60</u>	①	1,149	0
	D3502-1 <u>F163478</u>	②	62	0
	D5123-7 <u>F153236</u>	②	145	0
	MS21920-20 <u>5024478</u>	②	108	0
	MS27039-1-10 <u>5071834</u>	①	313	0
	NAS1149D0363J <u>5068661</u>	①	3,131	0
220-Packaging <u>5095293</u>	AN4-41A	8	230	0
	AN4-6A	16	620	0
	AN5-32A	4	114	0
	D3500-1	4	101	0
	D3501-1	16	99	0
	MS21042L4	24	2,466	0
	MS21042L5	4	722	0
	NAS1149D0463J	32	3,386	0
	NAS1149D0563J	8	2,107	0

Part Specifications

Specifications could not be found.

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



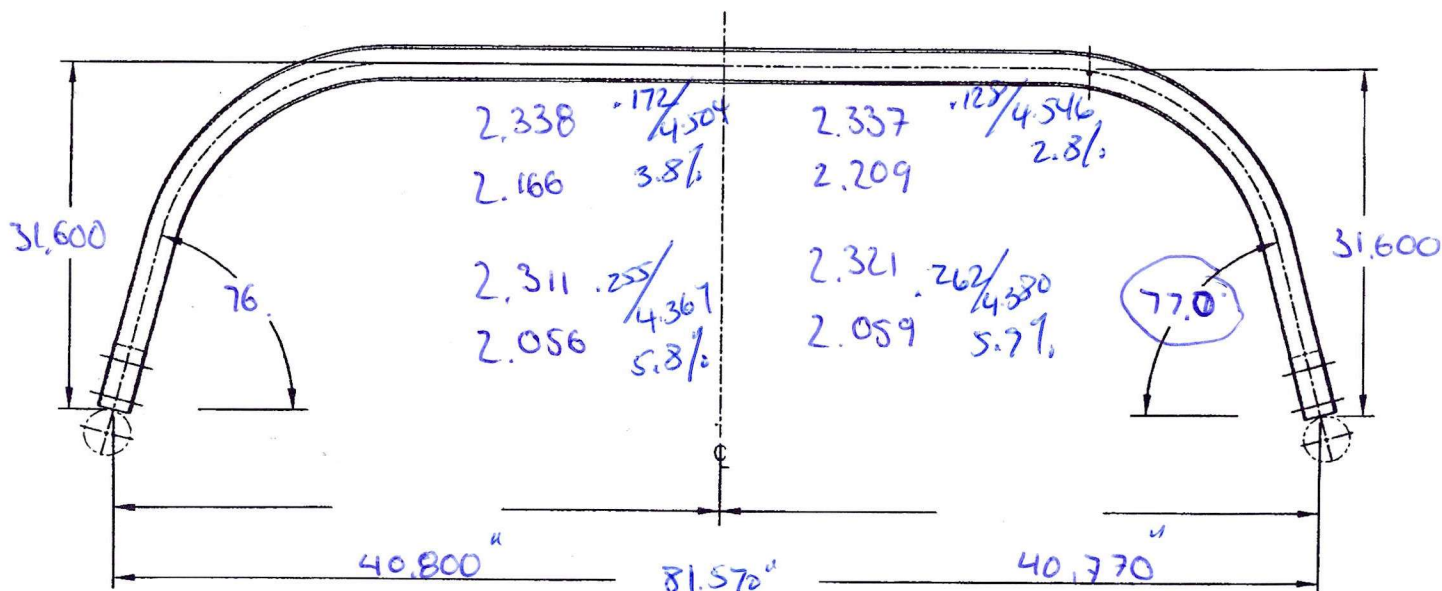
QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
Misidentified ☐	Past Due ☐								

DART AEROSPACE LTD		Work Order:	17-1673
Description: Crosstube High Aft (AS350/355)		Part Number:	D350-748-201
Inspection Dwg: D350-748-241 Rev: H		Page 1 of 1	

Required Dimension	Min	Max
Height	31.10	31.60
1/2 Span	40.77	41.03
Angle	75	77
Total Span	81.54	82.06
Bending Passes	7	--
Crushing	--	8%
Twist	--	0.38



	Side A	Side B
Bending Passes	40	39
Crushing		
Comments		
Side A Side B		
Top - 3.8% Top - 2.8%		
Bottom - 5.8% Bottom - 5.9%		

QC15 Inspection	DAS
Date	18 2013/07/30

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	10.08.23	Dwg Rev updated	KJ	
C	12.04.16	Added bending, crushing & twist dimensions	KJ	
D	12.07.31	Dwg Rev updated	KJ	
E	13.02.27	Dwg Rev updated	KJ	
F	14.02.13	Crushing & twist dimensions revised	KJ	
G	14.11.10	Height dimension revised	KJ	
H	15.07.20	Crushing dimension revised	KJ	

Item	Qty -241	Part Number	Description
1	X	D350-748-241	CROSSTUBE ASSEMBLY (AS 350/355 HI AFT)
2	1	D6015-125	CROSSTUBE (OR D6018-125)
3	2	D3502-1	SUPPORT
4	2	D5123-7	CLAMP CUSHION
5	1	AELS-1032-225	INSERT
6	1	NAS1149D0363J	WASHER (OR AN960JD10)
7	2	MS21920-20	CLAMP (OR MS21920-21/-22, PER DART SPEC. M-MS21920-21/-22)
8	1	MS27039-1-10	SCREW
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

GENERAL NOTES:

- MATERIAL: MANUFACTURED FROM D6015-125 OR D6018-125
FINISHED LENGTH AFTER TURNING = 124.70±0.06 (AFTER BENDING/TRIMMING = 122.70 REF)
- FINISH: MAGNETIC PARTICLE INSPECT PER DART QSI 038 4.2
CADMIUM PLATE PER AMS-QQ-P-416B, CLASS 1, TYPE II
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- TOLERANCE: PER DART QSI 018 UNLESS OTHERWISE NOTED.
WALL THICKNESS ECCENTRICITY PER DART QSI 038 7.2
MIN. ALLOWABLE: WALL IS -0.020 FROM NOMINAL
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: DART PART NUMBER "D350-748-241" AND BATCH NUMBER ON INSIDE OF CUFF
PER DART QSI 044 6.4 (VIBRATING STYLUS)
- WEIGHT: 29.85 lbs
- PART IS SYMMETRIC ABOUT CENTERLINE, EXCEPT FOR Ø0.297 HOLE.
- EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.

TURNING

- BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER BENDING.
- HEAT TREAT TO MIN. 180 KSI PER MIL-T-6736 OR AMS2759/1E AFTER TURNING. ACCEPTABLE TO VERIFY TENSILE STRENGTH BY HARDNESS TEST PER ASTM E18 TO 40-45 HRC.

BENDING

- ALL DIMENSIONS FOR BENT TUBE ARE POST STRESS RELIEF
- BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES PER SIDE. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D. ON TOP HALF OF BEND, AND 8% ON BOTTOM HALF OF BEND.
- MAX AMPLITUDE OF RIPPING ALONG BENT PORTION OF THE TUBE IS 0.030 (ZN A1-3)
- AFTER BENDING, STRESS RELIEVE TUBE AT 650°F ±0.25°F FOR A MINIMUM OF 2 HRS AND ALLOW TO COOL TO AMBIENT TEMPERATURE (REF AMS2759/1E).
- MAX TWIST AFTER STRESS RELIEF: WITH TUBE LAYED FLAT ON SURFACE, THE DIFFERENCE BETWEEN CUFF HEIGHTS FROM THE SURFACE MAY BE NO LARGER THAN 0.38 (ZN C1-3).

ASSEMBLY

- TO INSTALL D3502-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.02" TO 0.05" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- TORQUE CLAMPS 60 TO 80 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

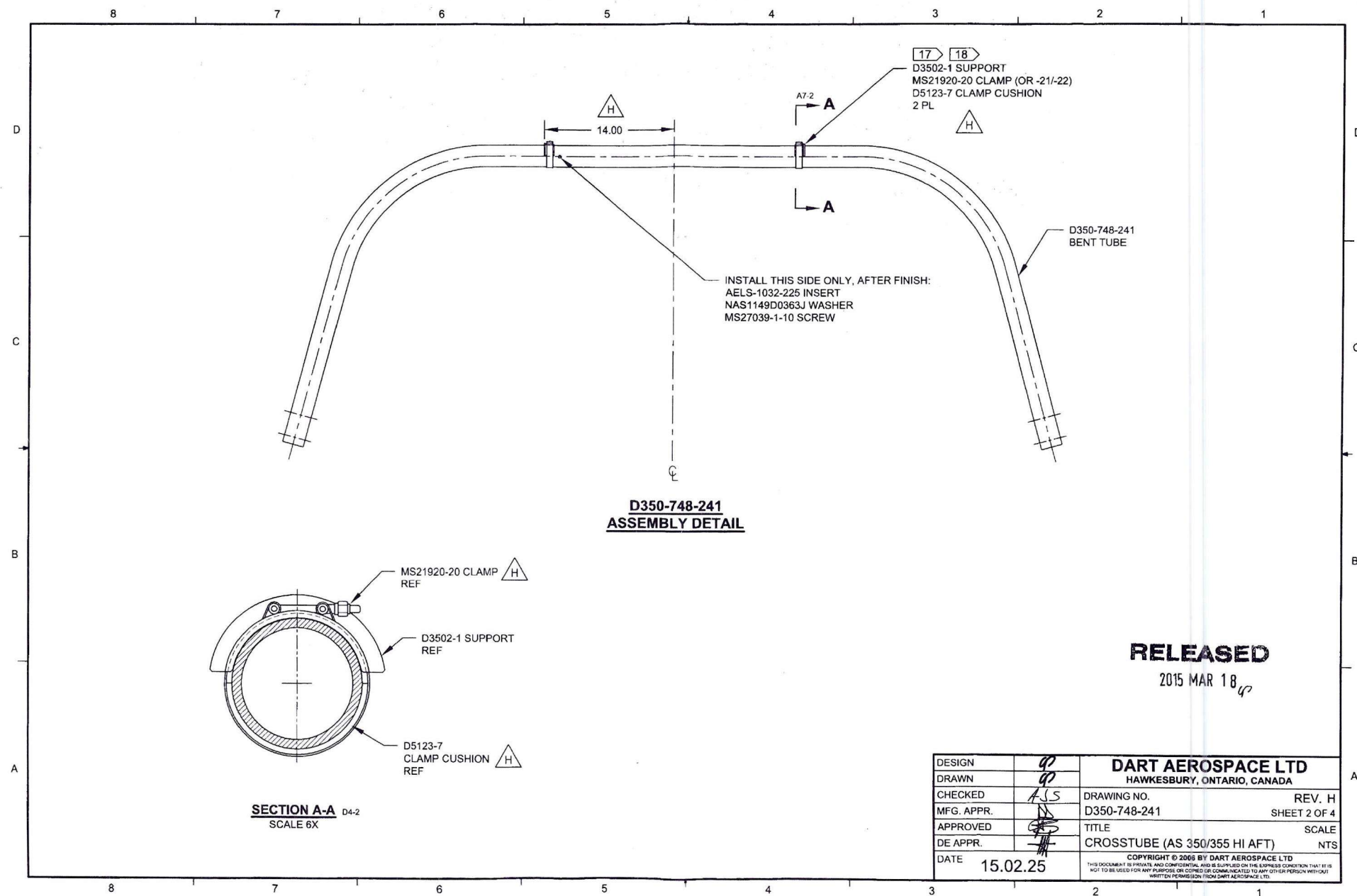
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2015 MAR 18

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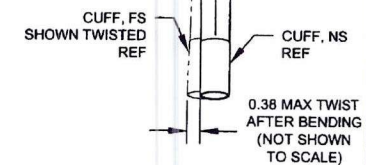
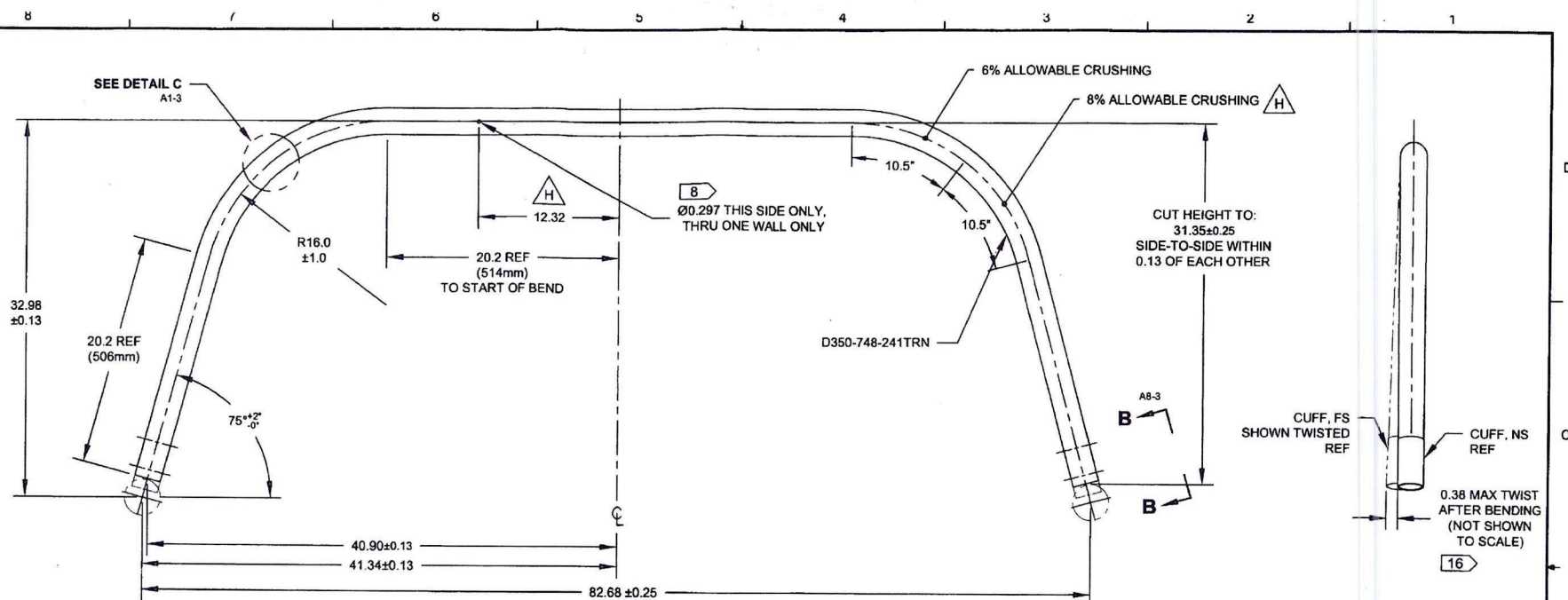
H	D5123-7 WAS D3595-063-395, MS21920-20 WAS -22, ALLOWABLE CRUSHING NOW 8% WAS 7%, 14.00 WAS 14.37 (D5-2), 12.32 WAS 12.69 (D5-3)	CP	15.02.25
G	RMV ABRASION STRIP, SUPPORT NOW W/ PROSEAL & CUSHION, ADD STRESS RELIEF, LONGER CUFF, NOW TRIM'D AFTER BEND, ADD WALL DIMS & UPDATE TOL.	CP	12.09.12
F	ADD HRC TEST OPTION (B8-1) PER PAR 09-040, ADD TWIST LIMIT (A8-1, C1-3), ADD D6015-125 OPTION (C8-1), STOCK DIM NOW MACHINED (D1-4)	CP	10.11.23
E	REVISE GENERAL NOTES; UPDATE TO CURRENT STANDARDS; RELOCATED FLAG #6 PER PAR 08-046 (ZN A8-3); ADD TOLERANCES (ZN C8-3, D2-3)	RF	09.09.30
D	MAG. PARTICLE AND CAD PLATE AS MFD.	CP	06.10.31
C	ADD CAD PLATING	CP	06.08.14
B	ADD D6018-125 & PRIME AND PAINT	CP	06.06.30
A	NEW ISSUE	CP	06.03.31
REV.	DESCRIPTION	BY	DATE
DESIGN	90		
DRAWN	90		
CHECKED	ALS		
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	15.02.25		
DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA			
DRAWING NO. D350-748-241		REV. H SHEET 1 OF 4	
TITLE CROSSTUBE (AS 350/355 HI AFT)		SCALE NTS	
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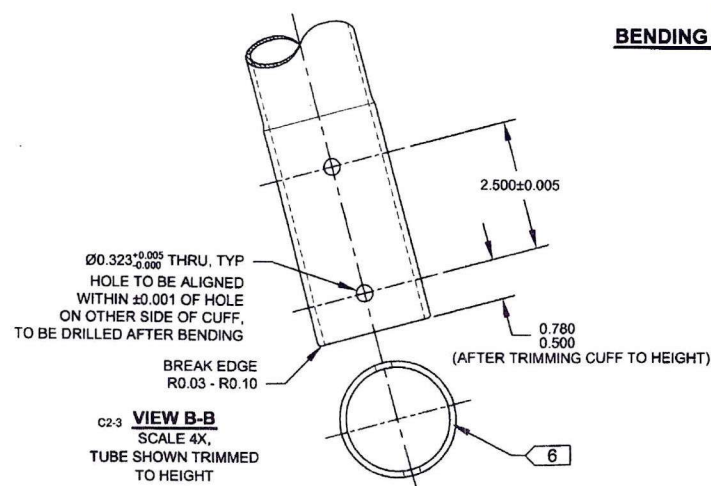
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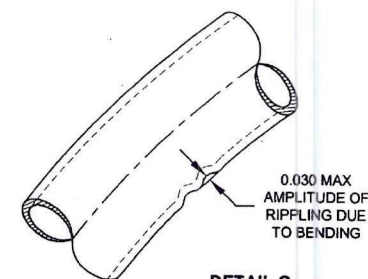
DESIGN	92	DART AEROSPACE LTD	
DRAWN	92	HAWKESBURY, ONTARIO, CANADA	
CHECKED	AJS	DRAWING NO.	REV. H
MFG. APPR.	N	D350-748-241	SHEET 2 OF 4
APPROVED	AS	TITLE	SCALE
DE APPR.	#	CROSSTUBE (AS 350/355 HI AFT)	NTS
DATE	15.02.25	COPYRIGHT © 2005 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



D350-748-241
BENDING AND DRILLING DETAIL 10



VIEW B-B
SCALE 4X,
TUBE SHOWN TRIMMED
TO HEIGHT

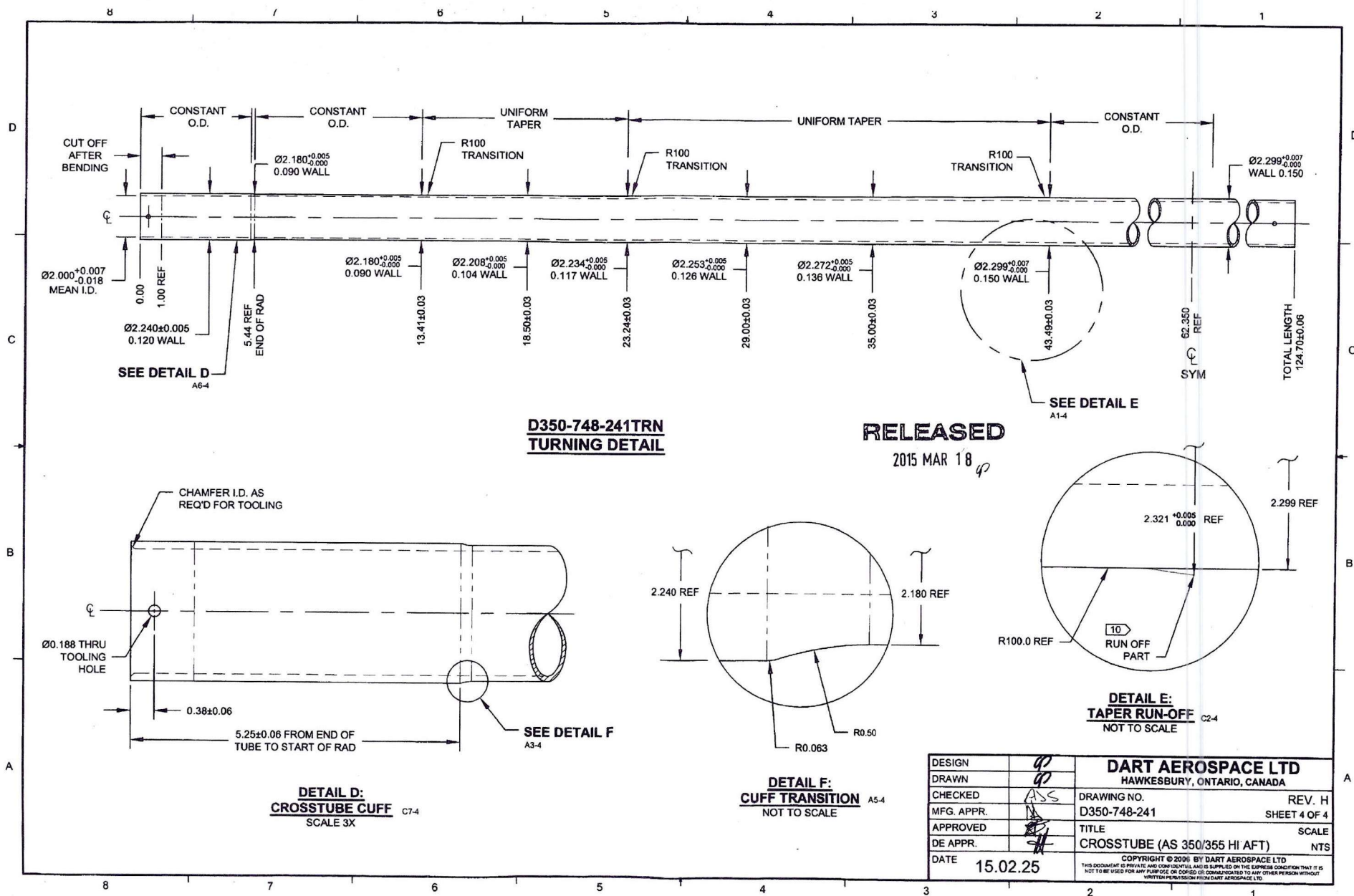


DETAIL C D7-3
SCALE 4X
RIFFLING EXAGGERATED

RELEASED

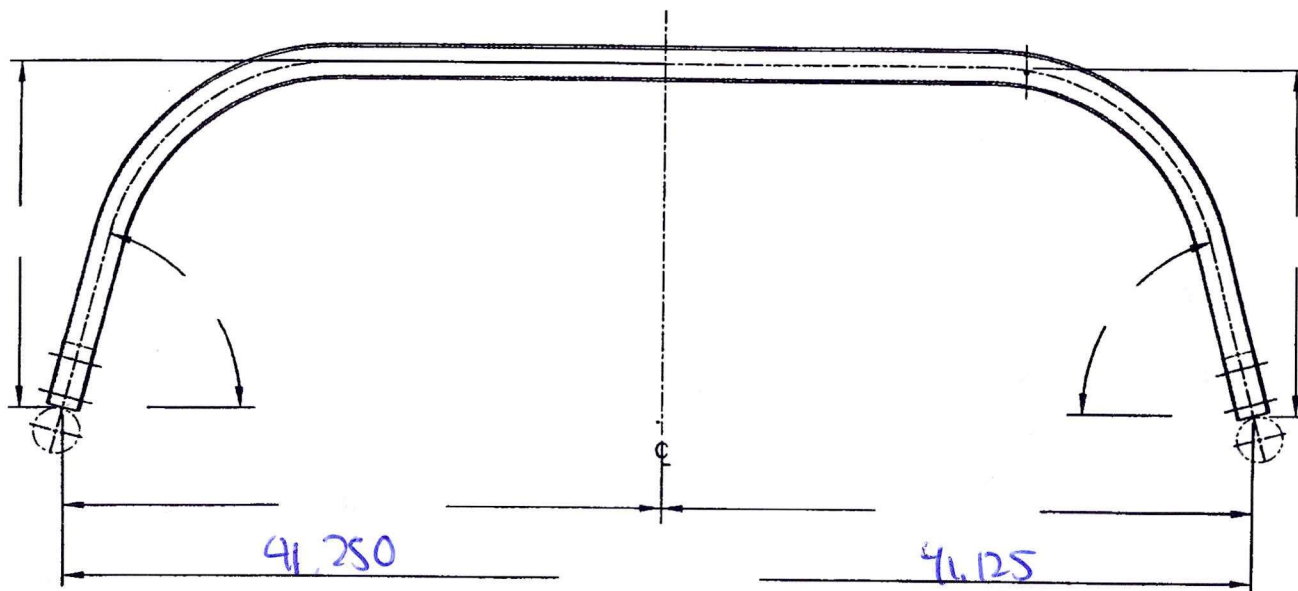
2015 MAR 18

DESIGN	90	DART AEROSPACE LTD	
DRAWN	90	HAWKESBURY, ONTARIO, CANADA	
CHECKED	ASS	DRAWING NO.	REV. H
MFG. APPR.		D350-748-241	SHEET 3 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE (AS 350/355 HI AFT)	NTS
DATE	15.02.25	COPYRIGHT © 2008 BY DART AEROSPACE LTD	
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR REPRODUCED IN ANY MANNER WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.			



DART AEROSPACE LTD		Work Order:	174673
Description: Crosstube High Aft (AS350/355)		Part Number:	D350-748-201
Inspection Dwg: D350-748-241	Rev: H		Page 1 of 1

Required Dimension	Min	Max
Height	31.10	31.60
1/2 Span	40.77	41.03
Angle	75	77
Total Span	81.54	82.06
Bending Passes	7	--
Crushing	--	8%
Twist	--	0.38



	Side A	Side B
Bending Passes		
Crushing		
Comments		

QC15 Inspection	
Date	

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	10.08.23	Dwg Rev updated	KJ	
C	12.04.16	Added bending, crushing & twist dimensions	KJ	
D	12.07.31	Dwg Rev updated	KJ	
E	13.02.27	Dwg Rev updated	KJ	
F	14.02.13	Crushing & twist dimensions revised	KJ	
G	14.11.10	Height dimension revised	KJ	
H	15.07.20	Crushing dimension revised	KJ	

21.11

020.11

539



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER

PO040561

Supplier: MEI001-VC
Metcor Inc.
560 Boul. Arthur Sauve
Saint-Eustache
QC
J7R 5A8 Canada
Phone: 450 473 1884
Fax: 450 491 5498

PO No: PO040561

PO Date: 7/20/18

Due Date: 7/27/18

Purchase Order

Revision:

Revision Date:

Ship-To Contact: Phone:

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground

Pymt Terms: Net 30

Freight Terms:

Special Comments:

Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	174650	D350-748-201	Aft Crosstube AS350 / AS355 : TC STC SH06-27 Issue 2, FAA STC SR02359NY 11/03/04, EASA STC EASA.10016903 Revision 2 10/09/03, BRAZIL 2009S04-04 09/04/06 ISSUE P/O TO METCOR: AFTER BENDING: STRESS RELIEF AT 650° F ± 25° F FOR A MINIMUM OF 2 HRS AIR COOL TO AMBIENT TEMPERATURE note: crosstube made from 4130 seamless steel tube DETAIL C OF C REQUIRED	Firmed	-	7/27/18	1 pcs	0 pcs	1 pcs	\$205.00/pcs	\$205.00
	174651			Firmed	-	7/27/18	1 pcs	0 pcs	1 pcs	\$205.00/pcs	\$205.00
	174676			Firmed	-	7/27/18	1 pcs	0 pcs	1 pcs	\$205.00/pcs	\$205.00
	174674			Firmed	-	7/27/18	1 pcs	0 pcs	1 pcs	\$205.00/pcs	\$205.00
	174673			Firmed	-	7/27/18	1 pcs	0 pcs	1 pcs	\$205.00/pcs	\$205.00
Sub Total:							5	0	5		\$1,025.00
Grand Total:											\$1,025.00

Order Notes

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 7/20/18 2:42 PM dart.tsimiklis.chrisoula

CT.

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ
ST-EUSTACHE, QC J7R 5A8
Tel: 450-473-1884 / Fax: 450-491-5498

Reçu de livraison

Delivery Receipt

BON DE TRAVAIL Order	EXPÉDITEUR Shipper ID	BON D'EXPÉDITION Shipper
329270	1	129797

EXPÉDITION COMPLÈTE / Shipped Complete

CLIENT /Customer 215

DART AEROSPACE

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053



LIVRÉ À /Shipped To

DART AEROSPACE

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053

COMMANDE DU CLIENT Customer PO	BON DE LIVRAISON DU CLIENT Customer Shipper No.	TYPE DE MATÉRIEL Material Type	DATE DE LA COMMANDE Order Date	TRANSPORTEUR Carrier
40561		Steel	2018/7/20	CLIENT

QUANTITÉ Quantity	No. PIÈCE / Part No.	NOM DE LA PIÈCE / Part Name	DESCRIPTION DE LA PIÈCE Part Description	POIDS Weight
----------------------	-------------------------	--------------------------------	---	-----------------

5 D350-748-201 150,
CROSSTUBE
(5) D350-748-101
JOB 174650,174651,174676,174674,174673,
1 NIL

TYPE DE CONTENEUR Container Type	# DE CONTENEURS # Of Containers	COMMENTAIRES CONTENEUR Container Comments
-------------------------------------	------------------------------------	--

NIL 1

CERTIFICAT

EMPAQUETAGE Packing	
------------------------	--

QUANTITÉ EXPÉDIÉE / Quantity Shipped : 5

POIDS EXPÉDIÉ / Weight Shipped : 150,00

QUANTITÉ RESTANTE / Quantity Remaining : 0

POIDS RESTANT / Weight Remaining : 0,00

APPROUVÉ

CERTIFICAT

QUANTITÉ EXPÉDIÉE Quantity Shipped: 5

POIDS EXPÉDIÉ / Weight Shipped : 150,00

Signature:

Date:

EXPÉDIÉ LE / Shipped On : 2018/07/23

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Certificat de Conformité Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
329270	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K8A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K8A 1K7

COMMANDE DU CLIENT customer po	CLASSIFICATION PIECE part classification	MATÉRIEL material	MAÎTRE D'OEUVRE prime contractor	PROGRAM
40561	N/A	Steel		

SPÉCIFICATIONS DU PROCÉDÉ

processing specifications

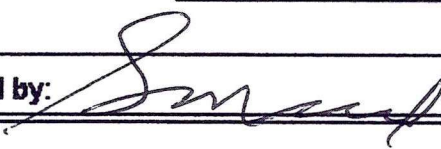
STRESS REL

SAE AMS 2759/1 REV.E

EXIGENCE / requirement	SPÉCIFICATIONS / specified	TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results
Visual			

QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description
5	150	D350-748-201 CROSSTUBE (5) D350-748-101 JOB 174650,174651,174676,174674,174673, 1 NIL

COMMENTAIRES / comments

APPROUVÉ par / Approved by: 		DATE: 2018-07-23
---	--	------------------

APPROUVÉ

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Certificat de Conformité Détaillé

Detailed Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
329270	1

CLIENT / customer 215

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY

ON K6A 1K7

COMMANDE DU CLIENT customer po	CLASSIFICATION PIECE part classification	MATÉRIEL material	MAÎTRE D'OEUVRE prime contractor	PROGRAM
40561	N/A	Steel		
SPÉCIFICATIONS DU PROCÉDÉ processing specifications				
STRESS REL				
SAE AMS 2759/1 REV.E				
EXIGENCE / requirement SPÉCIFICATIONS / specified TESTS EXÉCUTÉS / performed RÉSULTATS DE TESTS / results				
Visual				
QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description		
5	150	D350-748-201 CROSSTUBE (5) D350-748-101 JOB 174650,174651,174676,174674,174673, 1 NIL		

COMMENTAIRES / comments

STRESS RELIEF 650F, 2 HRS

Heat treatment (HT) was performed with equipment that meets the requirements of AMS2759 & AMS2750.

All HT operations were in compliance with AMS2759 and all verifications have been performed and documented. No unauthorized changes were performed in regards to the HT. We certify that the material was manufactured, sampled, tested and inspected in accordance with AMS2759 and the purchase order and was found to meet the requirements.

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Le traitement thermique (TT) a été fait en utilisant des équipements en conformité avec AMS2759 et AMS 2750.

Le TT a été fait tel que requis par AMS2759 et toutes les vérifications et les tests demandés ont été faites et documentés.

Aucun changement n'a été faite par rapport au TT. On certifie que le matériel a été fabriqué, échantillonné, testé et inspecté en accord avec AMS2759 et le bon de commande et le matériel rencontre les exigences spécifiées.

Ce document et les documents qui lui sont joints peuvent contenir des informations confidentielles, être soumis aux réglementations relatives au contrôle des exportations ou ayant un caractère privé. S'ils ne vous sont pas destinés, nous vous signalons qu'il est strictement interdit de les divulguer, de les reproduire ou d'en utiliser de quelque manière que ce soit le contenu. Toute exportation ou réexportation non autorisée est interdite.

APPROUVÉ par / Approved by:

Isabel Otero
Technician



DATE: 2018-07-23



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER

PO040694

Supplier: CAD002-VC
Cadorath Coating
2150 Logan Ave.
Winnipeg
MB
R2R 0J2 Canada
Phone: 204 633 9420
Fax: 204 633 8033

PO No: PO040694
PO Date: 8/7/18
Due Date: 8/16/18
Purchase Order Revision:
Revision Date:
Ship-To Contact: Phone:

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground
Pynt Terms: Net 30
Freight Terms:
Special Comments:

Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	174643	D350-748-101	FWD Crosstube AS350 / AS355 : TC STC SH06-27 Issue 2, FAA STC SR02359NY 11/03/04, EASA STC EASA.10016903 Revision 2 10/09/03, BRAZIL 2009S04-04 09/04/06 Issue P/O: Stress relief at 375degree for 5hrs Magnetic Particle Inspect per ASTM E1444 Cad Plate per AMS-QQ-P-416B, Class 1, Type 2 Embrittle relief at 375 defree for 8 hrs, Chromate Treat C of C req'd	Firmed	-	8/16/18	1 pcs	0 pcs	1 pcs	\$805.00/pcs	\$805.00
	174634	1 X	AUG 15 2018	Firmed	-	8/16/18	1 pcs	0 pcs	1 pcs	\$805.00/pcs	\$805.00
	174618	1 X	AUG 15 2018	Firmed	-	8/16/18	1 pcs	0 pcs	1 pcs	\$805.00/pcs	\$805.00
	174635	1 X	AUG 15 2018	Firmed	-	8/16/18	1 pcs	0 pcs	1 pcs	\$805.00/pcs	\$805.00
	174633	1 X	AUG 15 2018	Firmed	-	8/16/18	1 pcs	0 pcs	1 pcs	\$805.00/pcs	\$805.00
Sub Total:							5	0	5		\$4,025.00

Items											
Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
2	174676	D350-748-201	Aft Crosstube AS350 / AS355 : TC STC SH06-27 Issue 2, FAA STC SR02359NY 11/03/04, EASA STC EASA.10016903 Revision 2 10/09/03, BRAZIL 2009S04-04 09/04/06 Issue P/O: Stress relief at 375degree for 5hrs Magnetic Particle Inspect per ASTM E1444 Cad Plate per AMS-QQ-P-416B, Class 1, Type 2 Embrittle relief at 375 defree for 8 hrs, Chromate Treat C of C req'd	Firmed	-	8/16/18	1 pcs	0 pcs	1 pcs	\$805.00/pcs	\$805.00
	174673	1	AUG 15 2018	Firmed	-	8/16/18	1 pcs	0 pcs	1 pcs	\$805.00/pcs	\$805.00
	181141	1	AUG 15 2018	Firmed	-	8/16/18	1 pcs	0 pcs	1 pcs	\$805.00/pcs	\$805.00
	181140	1	AUG 15 2018	Firmed	-	8/16/18	1 pcs	0 pcs	1 pcs	\$805.00/pcs	\$805.00
	174674	1	AUG 15 2018	Firmed	-	8/16/18	1 pcs	0 pcs	1 pcs	\$805.00/pcs	\$805.00
Sub Total:							5	0	5		\$4,025.00
Grand Total:										\$8,050.00	
Order Notes											
Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.											

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Plex 8/7/18 1:13 PM dart.tsimiklis.chrisoula

CD

Packing Slip



Cadorath Coating

2150 Logan Avenue, Winnipeg, Manitoba R2R-0J2

Phone: (204) 633-9420 Fax: (204) 633-8033

INVOICE NUMBER:

S97017

Net 2% Interest Per Month charged on Overdue Accounts.

Any claims for shortages, overcharges, or damaged goods must be made within seven (7) days from receipt of goods.

Sold To:
Dart Aerospace Ltd.
1270 Aberdeen St.

Hawksbury, ON K6A 1K7

ShipTo:

Customer Order #:	DateReceived:	Terms:	G.S.T. #:	Ship Via:	Ship Date:
PO040694	Aug-14-2018	NET 30 DAYS	10071 6547 RT0001		Aug-24-2018

Item # Qty P/N & Description

1	1 EA	CROSSTUBE	S/N S094239 ✓
		P/N d350-748-101	W/O 185681
2	1 EA	CROSSTUBE	S/N S093751 ✓
		P/N d350-748-101	W/O 185682
3	1 EA	CROSSTUBE	S/N S094573 ✓
		P/N D350-748-201	W/O 185685
4	1 EA	CROSSTUBE	S/N S095366 ✓
		P/N D350-748-201	W/O 185686
5	1 EA	CROSSTUBE	S/N S095319 ✓
		P/N D350-748-201	W/O 185687
6	1 EA	CROSSTUBE	S/N S094587 ✓
		P/N D350-748-201	W/O 185688
7	1 EA	CROSSTUBE	S/N S094598 ✓
		P/N D350-748-201	W/O 185690
8	1 EA	CROSSTUBE	S/N S093762 ✓
		P/N d350-748-101	W/O 185691
9	1 EA	CROSSTUBE	S/N S092985 ✓
		P/N d350-748-101	W/O 185683
10	1 EA	CROSSTUBE	S/N S093217 ✓
		P/N d350-748-101	W/O 185684

**CERTIFICATE OF
CONFORMANCE**

**CADORATH PLATING CO. LTD.
2150 LOGAN AVENUE
WINNIPEG, MANITOBA R2J-0J1**

DATE: Aug-24-2018

CONSIGNED TO: Dart Aerospace Ltd.
1270 Aberdeen St.
Hawksbury, ON K6A 1K7

W/O #: 185685

INVOICE #: 97017

**CONTRACT OR
PURCHASE ORDER #** PO040694

DESCRIPTION: CROSSTUBE

QTY 1

P/N # D350-748-201

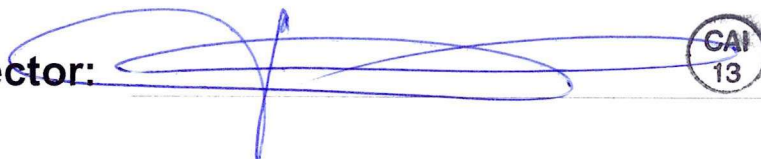
S/N # S094573

STRESS RELIEF BAKE HEAT CHART # 18-723. MPI IAW ASTM-E-1444. CADMIUM PLATE IAW AMS-QQ-P-416C TYPE 2 YELLOW CLASS 1. FINAL MPI IAW ASTM-E-1444. EMBRITTLE RELIEF BAKE HEAT CHART # 18-750.

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CERTIFICATE: I certify that the items indicated here on have been inspected and tested and conform to all specifications and requirements detailed on the contract or purchase order.

Approved Inspector:







Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO040976**

Supplier: SKY002-VC
Skysservice
6120 Midfield Road
Mississauga
ON
L5P 1B1 Canada
Phone: 905-678-5636
Fax: 905-678-5841

PO No: PO040976
PO Date: 9/11/18
Due Date: 9/13/18
Purchase Order Revision:
Revision Date:
Ship-To Contact: Lavoie, Chantal
clavoie@dartaero.com

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground
Pynt Terms: Net 30
Freight Terms:
Special Comments:

Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	180615	D4464-041	Fuel Tank Assembly : Various STC's ISSUE P/O : LIQUID PENETRANT INSPECTION AS PER QSI 038 OR LPI AS PER ASTM 1417 LEVEL 2	Firmed	-	9/13/18	1 pcs	0 pcs	1 pcs	\$116.17647/pcs	\$116.18
2	178952	D407-667-205	Aft Crosstube - High 407 : TC STC SH01-5 Issue 3, FAA STC SR01304NY 05/12/15, JCAB JAPAN STC-32-OSA 02/02/28, EASA STC EASA.IM.R.S.01179 06/07/03, BRAZIL 2009S08-16 09/08/25, BRAZIL 2009S08-17 09/08/25 *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 0380	Firmed	-	9/13/18	1 pcs	0 pcs	1 pcs	\$116.17647/pcs	\$116.18
179372			SEP 13 2018	Firmed	-	9/13/18	1 pcs	0 pcs	1 pcs	\$116.17647/pcs	\$116.18
179373			SEP 13 2018	Firmed	-	9/13/18	1 pcs	0 pcs	1 pcs	\$116.17647/pcs	\$116.18
179374			SEP 13 2018	Firmed	-	9/13/18	1 pcs	0 pcs	1 pcs	\$116.17647/pcs	\$116.18
181961			SEP 13 2018	Firmed	-	9/13/18	1 pcs	0 pcs	1 pcs	\$116.17647/pcs	\$116.18
181962			SEP 13 2018	Firmed	-	9/13/18	1 pcs	0 pcs	1 pcs	\$116.17647/pcs	\$116.18
Sub Total:							6	0	6		\$697.06



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO040976**

Items											
Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
3	174618	D350-748-101	FWD Crosstube AS350 / AS355 : TC STC SH06-27 Issue 2, FAA STC SR02359NY 11/03/04, EASA STC EASA.10016903 Revision 2 10/09/03, BRAZIL 2009S04-04 09/04/06 Issue P/O: Stress relief at 375degree for 5hrs Magnetic Particle Inspect per ASTM E1444 Cad Plate per AMS-QQ-P- 416B, Class 1, Type 2 Embrittle relief at 375 defree for 8 hrs, Chromate Treat C of C req'd	Firmed	-	9/13/18	1 pcs	0 pcs	1 pcs	\$116.17647/pcs	\$116.18
	174634	1	X	Firmed	-	9/13/18	1 pcs	0 pcs	1 pcs	\$116.17647/pcs	\$116.18
	174639	1	X	Firmed	-	9/13/18	1 pcs	0 pcs	1 pcs	\$116.17647/pcs	\$116.18
	174642	1	X	Firmed	-	9/13/18	1 pcs	0 pcs	1 pcs	\$116.17647/pcs	\$116.18
	174643	1	X	Firmed	-	9/13/18	1 pcs	0 pcs	1 pcs	\$116.17647/pcs	\$116.18
Sub Total:							5	0	5		\$580.88
4	174673	D350-748-201	Aft Crosstube AS350 / AS355 : TC STC SH06-27 Issue 2, FAA STC SR02359NY 11/03/04, EASA STC EASA.10016903 Revision 2 10/09/03, BRAZIL 2009S04-04 09/04/06 ISSUE P/O TO METCOR: AFTER BENDING: STRESS RELIEF AT 650° F ± 25° F FOR A MINIMUM OF 2 HRS AIR COOL TO AMBIENT TEMPERATURE note: crosstube made from 4130 seamless steel tube DETAIL C OF C REQUIRED	Firmed	-	9/13/18	1 pcs	0 pcs	1 pcs	\$116.17647/pcs	\$116.18
	174674	1	X	Firmed	-	9/13/18	1 pcs	0 pcs	1 pcs	\$116.17647/pcs	\$116.18
	174676	1	X	Firmed	-	9/13/18	1 pcs	0 pcs	1 pcs	\$116.17647/pcs	\$116.18
	181140	1	X	Firmed	-	9/13/18	1 pcs	0 pcs	1 pcs	\$116.17647/pcs	\$116.18
	181141	1	X	Firmed	-	9/13/18	1 pcs	0 pcs	1 pcs	\$116.17647/pcs	\$116.18
Sub Total:							5	0	5		\$580.88

DAS
38
9-89



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada
Tel (613) 632-5200

PURCHASE ORDER PO040976

Items										
Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)
										Extended Price
										Grand Total: \$1,975.00

Order Notes

Procurement Quality Clauses
A005 right of entry
A012 chemical and physical test report
A016 personnel qualification
A017 raw material identification (as applicable)

A022 Apical Processing
A024 process certifications
A026 certification of material conformance

A041 quality management system
A042 dart notification by supplier
A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 9/13/18 7:53 AM dart.lavoie.chantal



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

SUBCONTRACT SHIPPER

SUBCONTRACT SHIP TO

Ship To: Skyservice
6120 Midfield Road
Mississauga, ON L5P 1B1 Canada
Phone: 905-678-5636 **Fax:** 905-678-5841

SHIPPER

Shipper No: 614
Shipper Date: 9/13/18
Carrier: *
Ship Via:
Vehicle Reg:
Note:
Freight Terms:

Part Information

Part No: D350-748-101
Cust Part No: D350-748-101
Reference No:
Part Information Note: DWG REV H IPP Rev:A New Issue 06-07-05 JLM
IPP Rev:B Update qty of MS21042L5 06-09-12 KJ
VERIFY BY:DD IPP Rev:C Rev B 07-11-15 DD IPP
Rev D Combined manufacturing 08.04.02 EC verified
by: DD IPP Rev:E 08-06-24 revD as per dwg DD
verified by:EC IPP Rev:F 10.08.04 added QSI010 4.3
DD verf:EC IPP REV:G ADD UNDER BEND
COMMENT 12-05-28 JLM IPP REV:H 12.11.05 as
per dwg D350-748-141G DD verf:JLM IPP REV:I
15.03.19 as per dwg D350-748-141revH dd verf:jlm
Drawing No:
Program:
Program Customer:
Addl Docs:
Commercial: Product Line: Crosstube - High
Primary OEM Application: Airbus
Manufacturer: DART
Advertised on web?: No
Shipping Dims & Weights: Metric: L2.29m x W0.86m x
H0.18m,Actual Weight of 26.31 kg
Shipping Dims & Weights: Imperial: L90" x W34" x
H7",Actual Weight of 58 lbs
Name: FWD Crosstube AS350 / AS355
Product Family: Landing Gear
Piece Weight: 0 lbs
Alloy Type:
Alloy - Temper: -
Description: TC STC SH06-27 Issue 2, FAA STC SR02359NY
11/03/04, EASA STC EASA.10016903 Revision 2
10/09/03, BRAZIL 2009S04-04 09/04/06
Quantity:

OPERATION

Operation: Outsource - 174
Description: ISSUE P/O TO SKYSERVICE: _____
Note:

DETAIL

Part	Operation	PO	Job	Container	Heat Code	Net Weight (lbs)	Gross Weight (lbs)	Quantity
D350-748-101 09/20/2017 LMC Can Only Be Sold To AVIC. Discontinued And Replaced By D350-748-103. Oversized Item, Please Refer To Shipping Instructions.	Outsource ISSUE P/O TO SKYSERVICE: _____	PO040976	174634	S093239		0	0	1
			174639	S093544		0	0	1
			174642	S093602		0	0	1
			174618	S093751		0	0	1
			174643	S093762		0	0	1
D350-748-201 09/20/2017 LMC Can Only Be Sold To Avic. Discontinued And Replaced By D350-748-203.	Outsource ISSUE P/O TO SKYSERVICE: _____	PO040976	174673	S094573		0	0	1

9/13/2018

[Dart Hawkesbury] Subcontract Shipper - Lavoie, Chantal

Oversized Item, Please Refer
To Shipping Instructions.**D407-667-205**09/20/2017JR Oversized Item,
Please Refer To Shipping
Instructions.**Outsource***** WEAR LATEX GLOVES WHEN HANDLING
CROSSTUBE*** Liquid Penetrant Inspection as
per QSI 038O**PO040976**

174674	S094587	0	0	1
174676	S094598	0	0	1
181140	S095319	0	0	1
181141	S095366	0	0	1
181961	S103098	0	0	1

178952	S103104	0	0	1
179373	S103183	0	0	1
179372	S103185	0	0	1
181962	S103187	0	0	1
179374	S103902	0	0	1

D4464-04109/20/2017JR D4464-041 Aux
Fuel Tank Reservoir (Ref.
D350-794-141) Is About 0.25"
Longer Than The D4055-041
Aux Fuel Tank Reservoir (Ref.
D350-794-041); Please
Contact Technical Support For
More Details (Ref.: Case
9383).**Outsource**ISSUE P/O : _____ LIQUID
PENETRANT INSPECTION AS PER QSI 038
OR LPI AS PER ASTM 1417 LEVEL 2**PO040976**

180615	S100152	0	0	1
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Total	17	0	0	17
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Driver Signature

Customer Copy

Plex 9/13/18 8:03 AM dart.lavoie.chantal

**skyservice****Work Order Traveler**

Sky Service F.B.O. Inc.

10105 Ryan Avenue, Dorval, Quebec, H9P 1A2

TCCA AMO 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO37372	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: PO040976
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:**CARRY OUT NDT ON:**

1 FUEL TANK , P/N# D4464-041 , J/S# 180615 ✓

6 AFT CROSSTUBES , P/N# D407-667-205 , J/S# 181961 , 181962 , 179372 , 179373 , 179374 , 178952 ✓

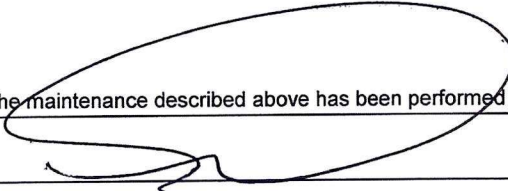
5 FWD CROSSTUBES , P/N# D350-748-101 , J/S# 174618 , 174639 , 174642 , 174643 , 174634 ✓

5 AFT CROSSTUBES , P/N D350-748-201 , J/S# 174673 , 174674 , 174676 , 181140 , 181141 ✓

Action Taken:	Date:	Initial/Stamp:
LPI C/O IAW ASTM E-1417 REV. 16 3 LEAKS FOUND IN FUEL TANK REMAINING ITEMS: NO CRACK FOUND PEN. ZL-56, MPO13600, CLEANER SKC-S MPO13923 , DEV. MPO11715 , UV LIGHT M-20142	SEP 11 2018	  DAS 38 9-89

Description	Location	P/N	Qty	Batch	S/N Off	S/N On

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature: 	ACA/SCA Stamp 	Date: SEP 11 2018
Name: RAEIK MELIKIAN		



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

Container View (Active) - Master Unit Containers

Master Unit No	Container No	Part No	Part Name	From Container	Current Location	Quantity
005861	S117252	AN4-41A	Bolt	S006292	ST342	8
005861	S117251	AN4-6A	Bolt	S089455	ST345	16
005861	S117250	AN5-32A	Bolt	S019376	ST336	4
005861	S117249	D3500-1	Saddle	f163361	ST403	4
005861	S117247	D3501-1	Bushing	s093508	ST037	16
005861	S117245	MS21042L4	Nut	S094597	ST303	24
005861	S117244	MS21042L5	Nut	S083541	ST303	4
005861	S117243	NAS1149D0463J	Washer	S089299	ST263	32
005861	S117242	NAS1149D0563J	Washer	S093773	ST263	8

Note: Ad hoc query view of Part.dbo.Container where Container.Active = 1.

Plex 10/11/18 9:19 AM dart.quirion.sonia

4.0 WEIGHT AND BALANCE

The following weight and balance information is for Dart crosstube installations only. This data should be similar to the existing installation. Differences from the parts removed are the responsibility of the installer.

DART CROSSTUBE	FWD/ AFT	WEIGHT	STA	MOMENT
D350-748-101	Fwd	35.2 lb	106.3 in	3742 lb-in
D350-748-103		(16.0 kg)	(2.70 m)	(43.2 kg-m)
D350-748-201	Aft	34.7 lb	162.4 in	5635 lb-in
D350-748-203		(15.7 kg)	(4.12 m)	(64.7 kg-m)

5.0 PARTS LIST

Qty -101	Qty -103	Qty -201	Qty -203	Part Number	Description
X				D350-748-101	CROSSTUBE INSTALLATION, AS 350/355 HIGH FWD
	X			D350-748-103	CROSSTUBE INSTALLATION, AS 350/355 HIGH FWD (SS)
		X		D350-748-201	CROSSTUBE INSTALLATION, AS 350/355 HIGH AFT
			X	D350-748-203	CROSSTUBE INSTALLATION, AS 350/355 HIGH AFT (SS)
1				D350-748-141	CROSSTUBE ASSEMBLY, AS 350/355 HIGH FWD
	1			D350-748-143	CROSSTUBE ASSEMBLY, AS 350/355 HIGH FWD (SS)
		1		D350-748-241	CROSSTUBE ASSEMBLY, AS 350/355 HIGH AFT
			1	D350-748-243	CROSSTUBE ASSEMBLY, AS 350/355 HIGH AFT (SS)
*2	*2	*2	*2	D3502-1	SUPPORT
*2	*2	*2	*2	D5123-7	CLAMP CUSHION
*1		*1		AELS-1032-225	INSERT
	*1		*1	AETC-1032	INSERT
*2	*2	*2	*2	MS21920-20	CLAMP (OR MS21920-21/-22)
*1		*1		MS27039-1-10	SCREW
	*1		*1	NAS1685-3-8	SCREW (OR MS51958-63)
*1		*1		NAS1149D0363J	WASHER (OR AN960JD10)
	*1		*1	NAS1149C0363R	WASHER (OR AN960C10)
4	4	4	4	D3500-1	SADDLE
16	16	16	16	D3501-1	BUSHING
16	16	16	16	AN4-6A	BOLT
8	8	8	8	AN4-41A	BOLT
4	4	4	4	AN5-32A	BOLT
32	32	32	32	NAS1149D0463J	WASHER (OR AN960JD416)
8	8	8	8	NAS1149D0563J	WASHER (OR AN960JD516)
24	24	24	24	MS21042L4	NUT (OR MS21042-4)
4	4	4	4	MS21042L5	NUT (OR MS21042-5)

* REFERENCE ONLY. PARTS ARE INCLUDED IN D350-748-141/-143/-241/-243 ASSEMBLIES ABOVE

PAGE 1 OF 1

Description: CROSSTUBE HIGH AFT[illegible]